

# SUSY

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## **Executive summary:**

- Rather quiet edition for SUSY
- LEP output is fading away, Tevatron run 2 has still to ramp up
- No significant issues expected for the forthcoming '05-06 edition

# Supersymmetry

Encoders: L.Pape (CERN EP), K.Olive (U.Minnesota)

**New measurements encoded:** 129 (160 in 02; 204 in 00; 114 in 98)

- LEP: 81 (120; 174)
- Tevatron: 13 (22; 20)
- Theory: 20 (13; 6) (of which 11 under “Cosmology  $\chi^0$  limits”)
- DM searches: 9
- Other exp’s: 6 (5; 4)

## **Minireviews:**

- Supersymmetry part I: Theory (H.Haber, UCSC)
- Supersymmetry part II: Experiments (M. Schmitt, NWU)
- **Light gluinos (H. Murayama, UCB) removed**

# Detailed breakdown

$\chi^0$ direct	2 (2)	$\chi^\pm$ long lived	1 (1)		
$\sigma_{el}(\chi^0 p)$ spin-dep	<b>3</b>	sneutrino	7 (14)	<b>sbottom</b>	<b>14 (8)</b>
$\sigma_{el}(\chi^0 p)$ spin-indep	<b>7</b>	selectron	8 (9)	stop	20 (11)
$\chi^0$ dark matter	0 (1)	smuon	6 (8)	gluino	4 (8)
$\chi^0$ cosmology	14 (9)	stau	7 (13)	<b>light gluino</b>	<b>5 (1)</b>
$\chi^0$ unstable	6 (12)	degenerate slepton	1 (8)	gravitino	2 (3)
$\chi^0_{2,3,4}$	0 (10)	long-lived slepton	0 (1)	misc	1 (3)
$\chi^\pm$ unstable	9 (12)	squarks	12 (26)		

# Comments:

- Reduction in number of entries continues: LEP fading out, no run II results as yet
- 2 new Sections (  $\sigma_{e1}(\chi^0 p)$  spin-dep and spin-indep )
- Particular interest in light/stable gluinos and on light sbottom (theory papers, experimental limits):
  - $m(\text{sbottom}) < m(b)$  window practically closed (will be closed in '05 web update)
  - $m(\text{gluino}) > 6.3 \text{ GeV}$  from  $\Gamma_{\text{had}}(Z)$
  - $m(\text{gluino}) > 26.9$  for long-lived gluino (LEP)
- Analyses becoming more and more complicated, emphasis on non-minimal SUSY models (GMSB, RPV, light gravitinos, etc). Encoding is becoming particularly painful, with footnotes' size growing.

# Prospects/issues

- Still a few papers from LEP coming out (global constraints in MSSM, RPV limits). Some over 100 page long!
- Reduced hopes of global combined limits from the 4 collaborations, due to lack of manpower
- Tevatron run 2 analysis expected for end-05 => possibly new gluino/squark/GMSB limits for RPP06
- Limits on new models (AMSB, split SUSY, etc) may require additional flexibility in the listings
- Ability to include plots in the listings still strongly needed (but may create more problems that it solves!)